A P P N O T E S SM

Using a USB Ethernet Adapter with a MAJIC® Probe

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Introduction

A MAJIC® probe can communicate to a host computer over an Ethernet link or with an RS232 serial connection. Inexpensive USB to Ethernet adapters are widely available, making it easy to connect your MAJIC probe to the USB port on a Windows PC. Any such adapter on the market should work.

There are two main reasons why you might want to use a USB to Ethernet adapter. The host PC you're using does not have an Ethernet port; or, it is difficult to allocate an Ethernet static IP address in your network environment.

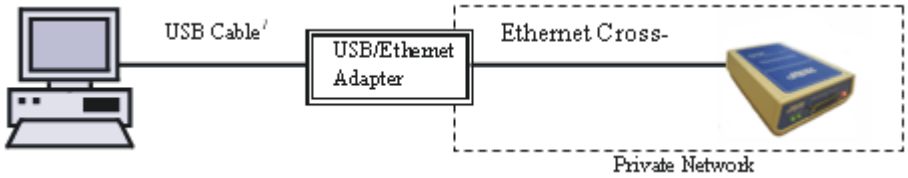
NOTE: The static IP issue can also be resolved by adding a second Ethernet port to your PC.

Getting Support

For additional assistance configuring a USB Ethernet Adapter connection to a MAJIC probe, please visit http://www.mentor.com/supportnet/.

How it Works

The USB to Ethernet adapter uses a Microsoft standard called NDIS to transmit MAJIC Ethernet packets via the USB adapter. Debuggers on the host side are not aware they are using a USB port. Instead, they see it as a software-based Ethernet interface. The following is a simple diagram showing the connection.



NOTE:

1. The adapter can also be plugged into a USB hub used by the host computer.
2. An Ethernet "cross over" cable can be used in place of the Ethernet switch or hub, as shown here.

Recommended USB to Ethernet Adapters

Any USB to Ethernet adapter should work with a MAJIC probe. We have tested the following adapters and found them to work well. Both are priced less than $30 (US) at local electronics stores.

Company: FRYS.com
Product: Airlink ASOHOUSB 10/100Mbps Fast Ethernet USB 2.0 Adapter

Company: FRYS.com
Product: TrendNet TU-ET100C 10/100Mbps USB to Ethernet Adapter

Installation

There are several parts to the installation process. First, install the adapter and adapter software drivers. Second, configure the adapter's Ethernet interface. Third, configure the IP address of your MAJIC probe. Lastly, you need to configure a debug environment, which is covered separately in your *MAJIC Probe User's Manual*.

NOTE: This application note assumes you are using the USB Ethernet Adaptor to create a private network for your MAJIC probe(s). Using the USB Network Adapter to connect to a larger network with your MAJIC probe being just one of the many devices on that network is outside the scope of this application note. In a larger network you need to have your Network Administrator allocate a static IP for your MAJIC® probe. Details on this setup are covered in your *MAJIC Probe User's Manual* (in the section on *Ethernet Setup*).

Installing and Configuring the Adapter Software

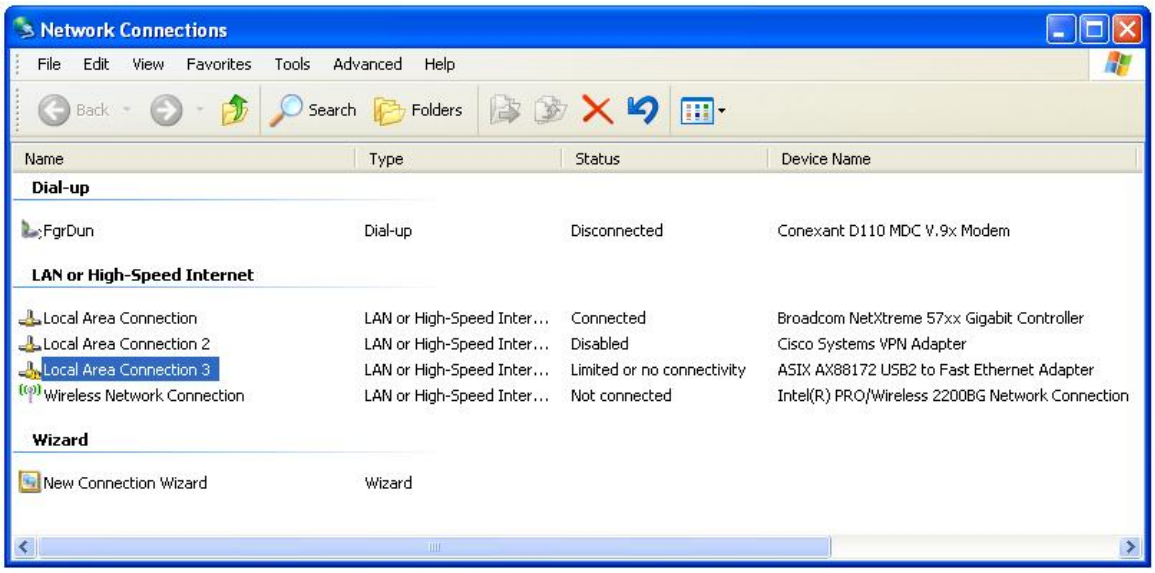
Step 1: Install your USB Ethernet adapter hardware and software using the directions provided by your adapter supplier.

Step 2: In Step 1 a new Ethernet Network interface was created on your computer. If you are setting up a private network via the USB Ethernet adapter, then you need to specify some IP address connection information.

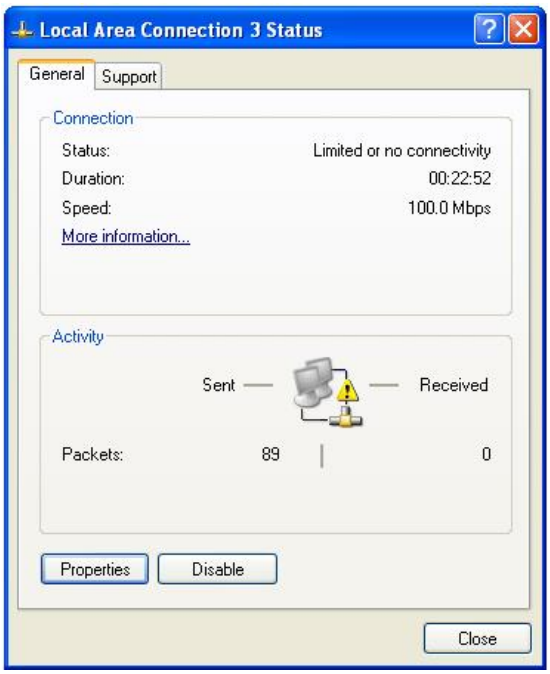
This is done using standard Microsoft Windows interfaces that vary slightly based on the version of Windows that you are using. The following images all relate to Window XP, but you should be able to follow along when using other Windows versions as well.

Right-click the **My Network Places** icon on your desktop and click **Properties**.

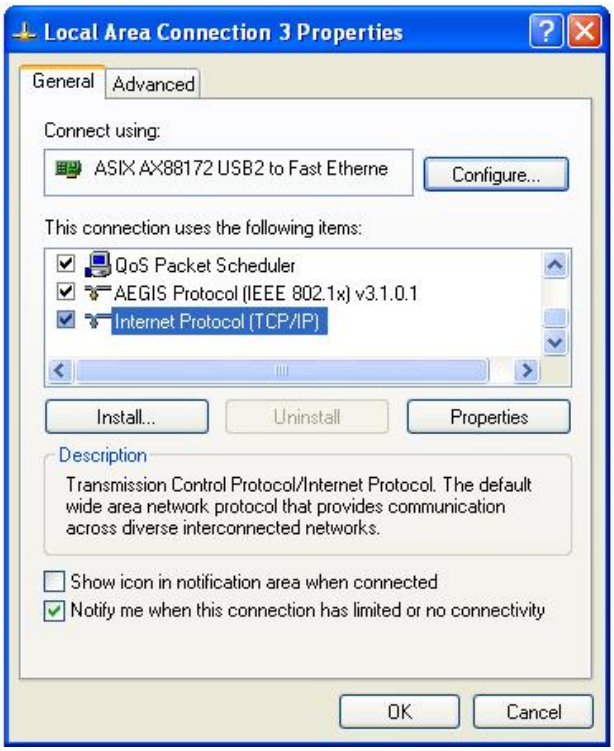
A Network Connections window appears displaying your existing network interfaces. If you have just completed your adapter install, the highest number connection is your adapter network interface. Please note you may need to click **View > Details** in order for this screen to appear.


Network Connections
File Edit View Favorites Tools Advanced Help
Back Search Folders
Name Type Status Device Name
Dial-up
FgrDun Dial-up Disconnected Conexant D110 MDC V.9x Modem
LAN or High-Speed Internet
Local Area Connection LAN or High-Speed Inter... Connected Broadcom NetXtreme 57xx Gigabit Controller
Local Area Connection 2 LAN or High-Speed Inter... Disabled Cisco Systems VPN Adapter
Local Area Connection 3 LAN or High-Speed Inter... Limited or no connectivity ASIX AX88172 USB2 to Fast Ethernet Adapter
Wireless Network Connection LAN or High-Speed Inter... Not connected Intel(R) PRO/Wireless 2200BG Network Connection
Wizard
New Connection Wizard Wizard

Step 3: Double-click on the connection you believe to be your USB Ethernet adapter. This displays a status dialog.

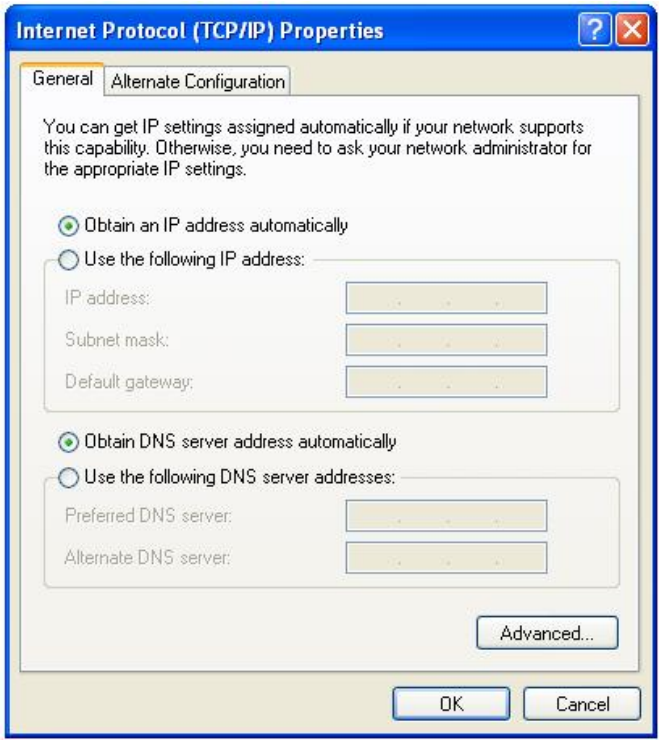


Click the **Properties** button, which brings up the Local Area Connection dialog.

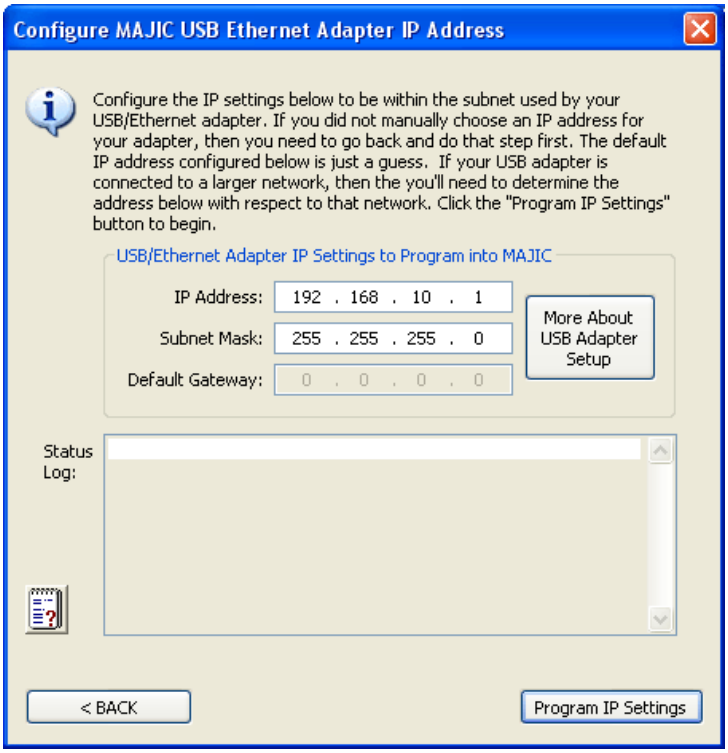


Step 4: Verify the **Connect using:** description box matches your USB Ethernet Adapter. If not, then go back and select a different Local Area Connection from the **Network and Dial-Up Connections** window.

Step 5: Select the Internet Protocol (TCP/IP) line to highlight it, then, click the **Properties** button. The **Internet Protocol (TCP/IP) Properties** dialog box appears.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Step 6: Modify it to match the following example dialog box. Then, click **OK**.

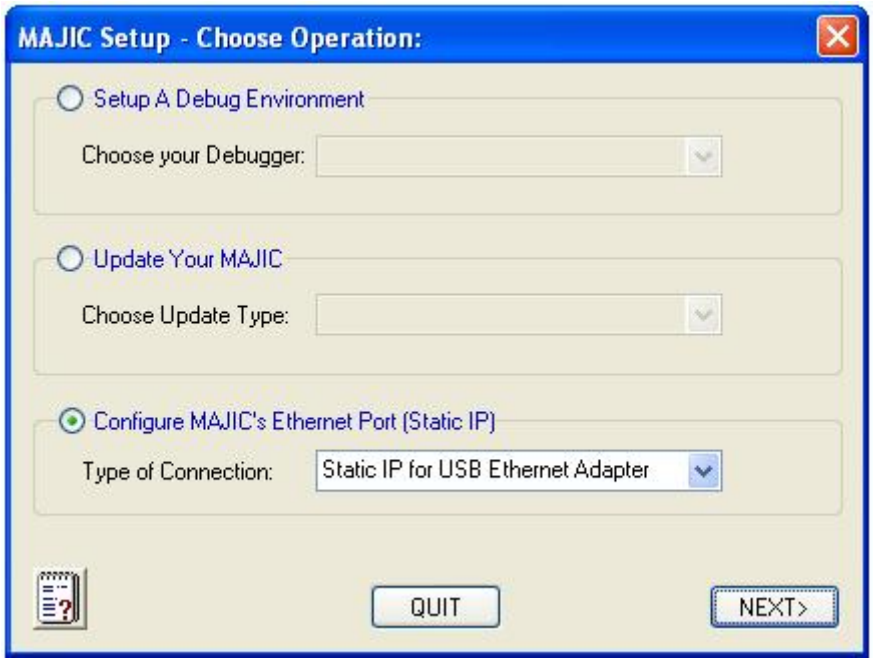

Configure MAJIC USB Ethernet Adapter IP Address
Configure the IP settings below to be within the subnet used by your USB/Ethernet adapter. If you did not manually choose an IP address for your adapter, then you need to go back and do that step first. The default IP address configured below is just a guess. If your USB adapter is connected to a larger network, then the you'll need to determine the address below with respect to that network. Click the "Program IP Settings" button to begin.
USB/Ethernet Adapter IP Settings to Program into MAJIC
IP Address: 192 . 168 . 10 . 1
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 0 . 0 . 0 . 0
More About USB Adapter Setup
Status Log:
< BACK
Program IP Settings

NOTE: The value you choose for the IP address must not collide with the IP range of any other network adapter you are using on your PC. If you are unsure what IP range is used within your company, then please talk with your network administrator about this issue.

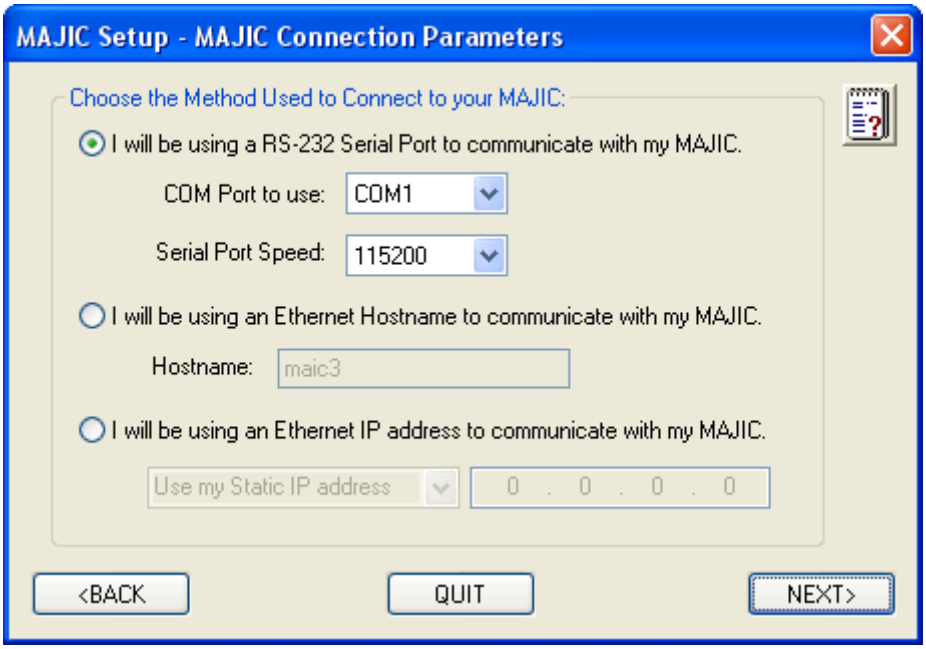
Step 7: Close the various network interface dialog boxes by clicking the **OK** buttons. You have now configured the USB Ethernet adapter interface. Next, you must configure your MAJIC probe to match this new network setup as described in the following section.

Configuring a MAJIC® Probe for a USB Ethernet Adapter Network

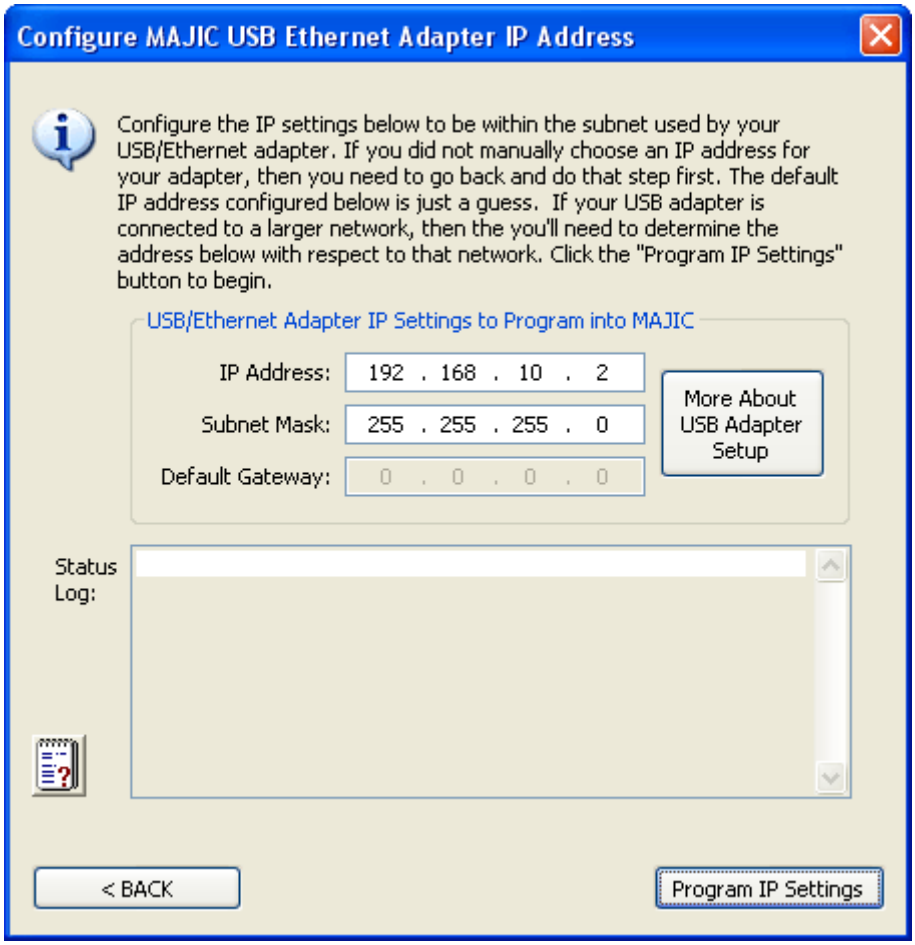
Step 1: Launch the MAJIC Setup wizard, read the introduction, then, click **NEXT**. The following form appears. Select the **Static IP for USB Ethernet Adapter** option and click **NEXT**.



Step 2: Now you are ready to program your MAJIC probe to utilize this new configuration. To do this, you typically need to use the supplied RS232 serial cable, since you have not yet established the ability to use Ethernet for communication. Select the communications parameters as shown in the following dialog box. If you are using COM2, then select it instead. Click **NEXT**.

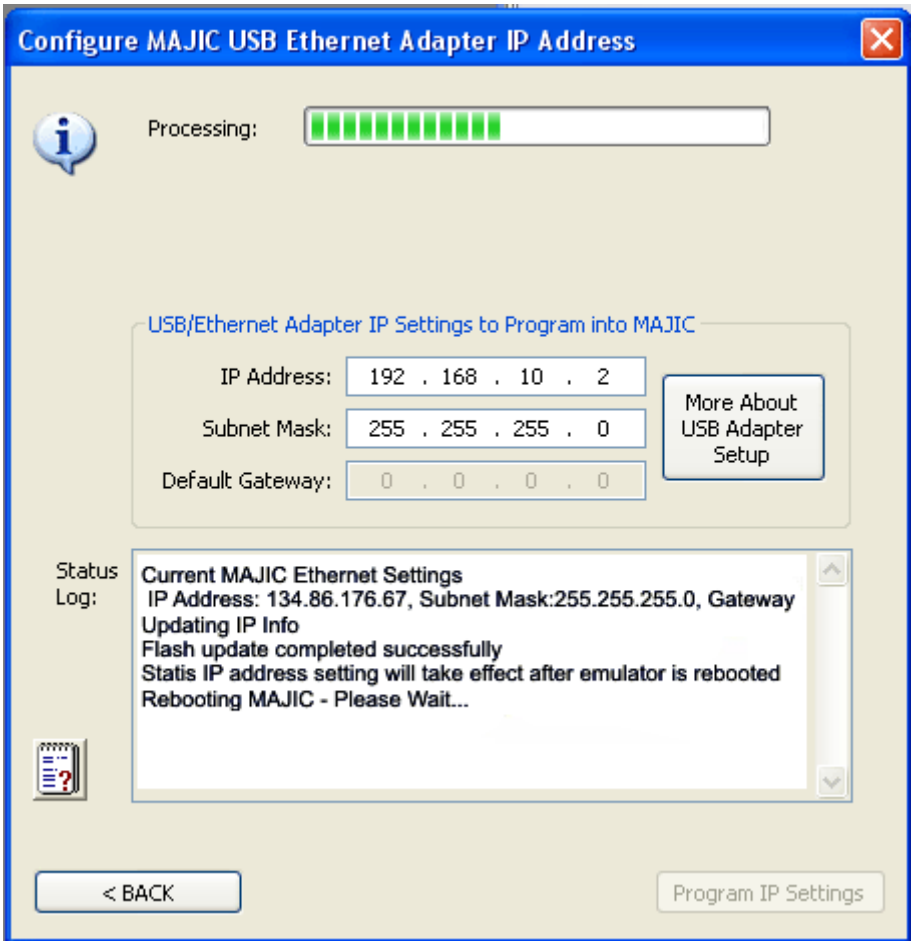

MAJIC Setup - MAJIC Connection Parameters
Choose the Method Used to Connect to your MAJIC:
I will be using a RS-232 Serial Port to communicate with my MAJIC.
COM Port to use:
COM1
Serial Port Speed:
115200
I will be using an Ethernet Hostname to communicate with my MAJIC.
Hostname:
maic3
I will be using an Ethernet IP address to communicate with my MAJIC.
Use my Static IP address
0 . 0 . 0 . 0
<BACK
QUIT
NEXT>

Step 3: The following dialog box appears. Configure the dialog box using an IP address in the same range as the IP address assigned to the USB Ethernet Adapter. The rightmost IP number (range 0.255) should be different than your adapter's IP number, and the other three numbers should be the same. Make sure the Subnet mask is set as shown. Then, click **NEXT**.

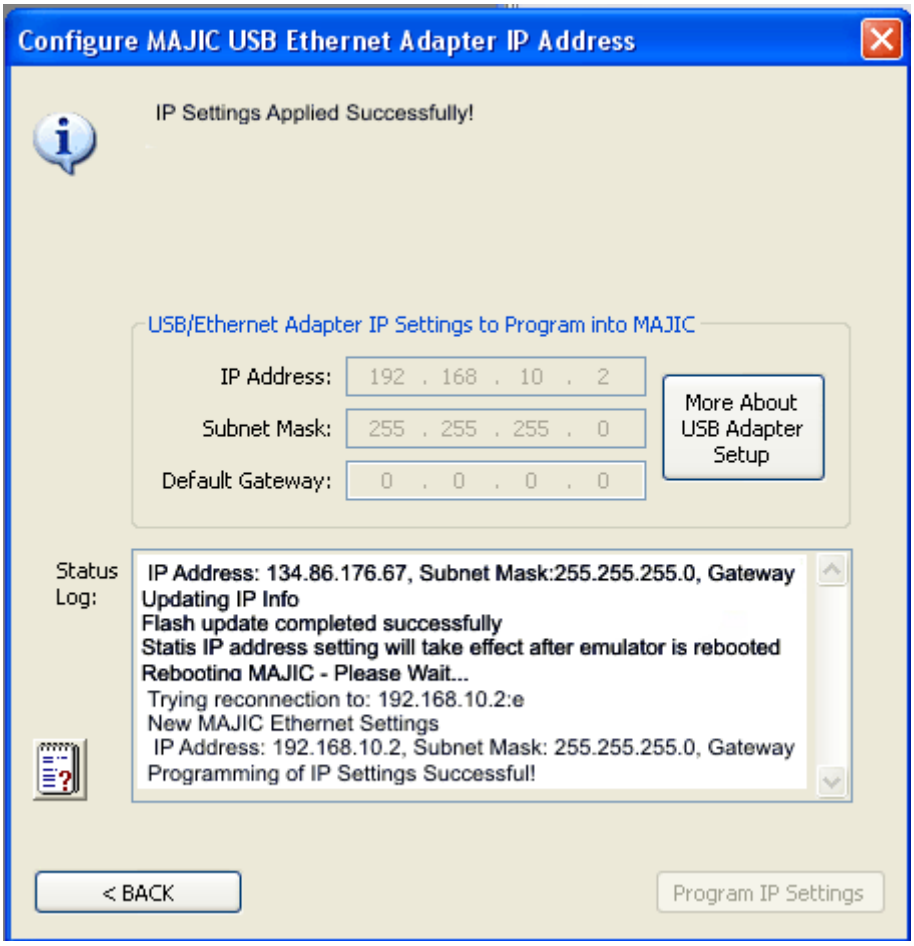

Configure MAJIC USB Ethernet Adapter IP Address
Configure the IP settings below to be within the subnet used by your USB/Ethernet adapter. If you did not manually choose an IP address for your adapter, then you need to go back and do that step first. The default IP address configured below is just a guess. If your USB adapter is connected to a larger network, then the you'll need to determine the address below with respect to that network. Click the "Program IP Settings" button to begin.
USB/Ethernet Adapter IP Settings to Program into MAJIC
IP Address: 192 . 168 . 10 . 2
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 0 . 0 . 0 . 0
More About USB Adapter Setup
Status Log:
< BACK
Program IP Settings

Step 4: Make sure your MAJIC probe is connected to the selected COM port and that no other programs are using it, then click **Program IP Settings**.

A console window appears to display the progress of the setup.


Configure MAJIC USB Ethernet Adapter IP Address
Processing:
USB/Ethernet Adapter IP Settings to Program into MAJIC
IP Address: 192 . 168 . 10 . 2
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 0 . 0 . 0 . 0
More About USB Adapter Setup
Status Log:
Current MAJIC Ethernet Settings
IP Address: 134.86.176.67, Subnet Mask:255.255.255.0, Gateway
Updating IP Info
Flash update completed successfully
Statis IP address setting will take effect after emulator is rebooted
Rebooting MAJIC - Please Wait...
< BACK
Program IP Settings

The following dialog box should also appear:


Configure MAJIC USB Ethernet Adapter IP Address
IP Settings Applied Successfully!
USB/Ethernet Adapter IP Settings to Program into MAJIC
IP Address: 192 . 168 . 10 . 2
Subnet Mask: 255 . 255 . 255 . 0
Default Gateway: 0 . 0 . 0 . 0
More About USB Adapter Setup
Status Log:
IP Address: 134.86.176.67, Subnet Mask:255.255.255.0, Gateway
Updating IP Info
Flash update completed successfully
Statis IP address setting will take effect after emulator is rebooted
Rebooting MAJIC - Please Wait...
Trying reconnection to: 192.168.10.2:e
New MAJIC Ethernet Settings
IP Address: 192.168.10.2, Subnet Mask: 255.255.255.0, Gateway
Programming of IP Settings Successful!
< BACK
Program IP Settings

Step 5: Follow the directions in the dialog to confirm the configuration is applied. You now have completed the setup of your MAJIC probe to work with your USB Ethernet Adapter network.

NOTE: If you encountered any errors during this configuration, please contact technical support via an email with the file *C:\majic_ip_settings.log* attached.

Configuring a Debug Environment

This step is covered in Chapter 3, *Debug Environment*, in your *MAJIC Probe User's Manual*. Please refer to it for details and remember to use the IP address you assigned to your MAJIC probe when specifying the communications parameters for your debug environment.